Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Previously Amended) A method for minimizing the aggregation tendencies of human kappa-IV immunoglobulin light chain, the method comprising:

a) identifying SMA or LEN mutation in the amino acid sequence of the light chain that leads to fibril formation;

b) substituting each mutation into SMA or LEN to identify the residues of a peptide that contribute to fibril formation;

c) synthesizing peptides spanning most of the light chain variable region that interacts with an endoplasmic reticulum chaperone selected from the group consisting of BiP, Hsp 70, and combinations thereof;

d) determining the V_L-derived peptides for their ability to prevent fibril formation in vitro wherein the peptides are selected from the group consisting of TDFTLTI (SEQ ID NO: 5), FTLTISS (SEQ ID NO: 1), FTLKISR (SEQ ID NO: 6), FTLEISR (SEQ ID NO: 12), LTLKLSR (SEQ ID NO: 13) and combinations thereof; and

e) inhibiting fibril formation by inserting the said peptide into the complimentary region of the light chain variable domain.

2. (Previously Amended) The method as recited in claim 1 wherein the method is conducted in a cell.

3. (Canceled)

4. (Canceled)

5. (Previously Amended) The method as recited in claim 1 wherein the peptide is inserted between residue position numbers 60 and 83 of the human kappa-IV light chain.

6. (Canceled)

7. (Previously Amended) The method as recited in claim 1 wherein the peptide is inserted when the protein is partially unfolded.

8. (Canceled)

9. (Canceled)

10. (Previously Amended) The method as recited in claim 7 wherein the peptide is inserted at a hairpin anchorage point in the human kappa-IV protein and its derivatives selected from the group consisting of TDFTLTI (SEQ ID NO: 5), FTLTISS (SEQ ID NO: 1), FTLKISR (SEQ ID NO: 6), FTLEISR (SEQ ID NO: 12), LTLKLSR (SEQ ID NO: 13), and combinations thereof.

11-13. (Canceled)

14. (Withdrawn) A peptide for insertion in an intact human kappa-IV light chain variable domain, the peptide comprising the following amino acid sequence:

Phe_{71}-Thr_{72}-Leu_{73}-Thr_{74}-Ile_{75}-Ser_{76}-Ser_{77}

wherein the subscript numbers are the residue location points in the domain.

15-30. (Canceled)

31. (Currently Amended) ~~The method as recited in claim 30~~ A method for preventing fibril assembly of human kappa-IV immunoglobulin, the method comprising:

a) identifying the residues of the peptide that contribute to fibril formation by mutating the amino acid sequence of human kappa-IV immunoglobulin; and

b) blocking said fibril formation by inserting biological molecules into the amino acid sequence, wherein the biological molecules are peptides selected from the group consisting of TDFTLTI (SEQ ID NO: 5), FTLTISS (SEQ ID NO: 1), FTLKISR (SEQ ID NO: 6), FTLEISR (SEQ ID NO: 12), LTLKLSR (SEQ ID NO: 13), and combinations thereof.

32. (Canceled)

33. (Currently Amended) ~~The method as recited in claim 32~~ A method for minimizing the aggregation tendencies of human kappa-IV immunoglobulin light chain protein in a cell, the method comprising:

a) expressing the protein in a cell;

b) identifying the residues of a peptide that contribute to fibril formation by mutating the amino acid sequence of the protein; and

c) interacting the peptide with the cell to inhibit fibril formation wherein the peptide is selected from a group consisting of TDFTLTI (SEQ ID NO: 5), or FTLTISS (SEQ ID NO: 1), or FTLKISR (SEQ ID NO: 6), or FTLEISR (SEQ ID NO: 12), or LTLKLSR (SEQ ID NO: 13).

34. (Currently Amended) The method as recited in claim ~~32~~ 33 wherein the peptide contains an amino acid sequence which is also contained in the protein.

35. (New) The method are recited in claim 31 wherein the biological molecules are inserted when the amyloid forming protein is partially unfolded.